Potomac Yard Metrorail Station
VWP Application # 19-0170
Additional Information Response
March 11, 2019

1. ***Alternatives Analysis***

Alternative B proposes impacts to 3.57 acres of surface waters compared to Alternative A with 0.03 acre of surface water impacts, Alternative B-CSX with no surface water impacts, and Alternative D with 0.93 acre of surface water impacts. For the purpose of VWP Permitting, the application does not contain sufficient information to demonstrate that Alternative B is the only practicable alternative.

RESPONSE: For the reasons outlined in the Joint Permit Application, and supplemented in this response, there are no practicable alternatives to Alternative B. The other alternatives evaluated are impracticable due to cost (Alternatives B-CSX and D) and/or logistics (Alternatives A, B-CSX, and D). Alternative B-CSX is not reasonably available to the City due to the expected challenges of obtaining necessary approvals from CSX Transportation to disrupt its service and relocate its tracks. Alternative A has comparatively fewer wetlands impacts, but it is significantly greater impacts on residents who be in close proximity to a station constructed at that location. Lastly, it must be emphasized that the proposed Project is necessary to support redevelopment of a discrete parcel of land—the North Potomac Yard. The high-density, mixed-use development planned by the City for North Potomac Yard cannot occur without walkable access to a Metrorail station. None of the other alternative station locations evaluated represent true alternatives to Alternative B because they do not satisfy the project purpose.

a. During the planning process, were off-site locations for the proposed redevelopment and Metrorail station considered? If yes, provide supporting documentation. If no, please explain the reasoning.

RESPONSE: Developable land in the City is a scarce and valuable resource; developable land with potential access to the Metrorail system is even more so. The City is responsible for managing this resource for the benefit of its current and future residents. Given the rapid pace of growth throughout the Washington D.C. Metropolitan Area and the strain on the transportation infrastructure, high-density growth that relies heavily on public transit in place of automobiles is at a premium. The North Potomac Yard is a rare parcel of developable land with access to the Metrorail system that can support the type of high-density, mixed-use development that is needed. The North Potomac Yard area sits adjacent to a rare open stretch of the Metrorail system within the beltway in which the existing stations are sufficiently far apart to make an infill station like this Project feasible. The City cannot move the developable land in North Potomac Yard, nor is it feasible at this time to expand the Metrorail system to new areas of the City. The Draft Environmental Impact Statement (DEIS) evaluated opportunities to rely on transportation alternatives to Metrorail as part of the No Build Alternative but found none to provide a feasible alternative to a new station to support redevelopment at North Potomac Yard. DEIS §§ 2.3, 2.5.3.1. In sum, and as detailed further below in this response, other off-site alternatives have been thoroughly evaluated, but the fact is that the purpose of the Project is to support redevelopment at a rare, high-value, and discrete geographic area. This unavoidably limits the opportunities for off-site alternatives to meet the Project purpose.

Potential Off-site Locations for Proposed Development

The 70-acre North Potomac Yard site is one of the larger redevelopment sites in the City and the only large redevelopment site in close proximity to Ronald Reagan National Airport. This location is the closest in the City to Washington D.C. and is part of the growing urban neighborhood of Pentagon City-Crystal City-Potomac Yard, recently dubbed "National Landing" for the successful bid to attract Amazon's HQ2. The location along an existing Metrorail line also gives this area a strong rationale for redevelopment.

For more than a decade, the Washington region has worked together to steer new development to areas well-served by existing transit and areas that can be served by future high-capacity transit. Through the Metropolitan Washington Council of Governments (MWCOG), the region has modelled future growth scenarios and determined that concentrating future growth into "regional activity centers"[1] that can be well-served by high capacity transit is essential to the region's future. In 2008, the City of Alexandria adopted a Transportation Master Plan[2] which established high-capacity transit corridors so that the City could absorb its share of the region's growth in a way that would not overwhelm the transportation network. The Transportation Master Plan established growth corridors, called the "growth crescent," a map of which is attached (Figure 1-Growth Crescent). Since then, the City has adopted Small Area Plans (SAP) that maximize the potential development in every location along that growth crescent.

Because the City is already maximizing the potential for future development along all its high capacity transit corridors, there is no option of "off-siting" the planned 7.525 million square feet at North Potomac Yard. Moreover, North Potomac Yard is one of the City's prominent redevelopment sites that is most desired by the marketplace because of its location and planned Metrorail station. There is, therefore, no true offsite alternative to redevelopment of North Potomac Yard.

Potential Off-site Locations for Metrorail Station and Other Alternative Transportation Options

Constructing a new station along an existing rail line adds capacity, increases ridership, improves traffic patterns while using the existing corridor already reserved for rail transit. The proposed Potomac Yard station, in particular, is directly tied to the redevelopment of a particular location. Adding a station at an offsite location would not support the redevelopment of Potomac Yard. During the National Environmental Policy Act (NEPA) process, multiple alternatives were considered within the general area of Potomac Yard along with several offsite alternatives suggested during the scoping process[3] but were determined to be unresponsive to Purpose and Need stated in Draft and Final Environmental Impact Statement (D/FEIS):

- Alternative E1 – Old Town Alexandria (provided regional transit access but did not serve Potomac Yard.)
- Alternative E2 - West End of Alexandria (provided regional transit access but did not serve Potomac Yard.)
- VRE Station Alternative – new Virginia Railway Express (VRE) commuter rail station at Potomac Yard along CSXT tracks (provides direct regional transit access to

[1] Region Forward: A Comprehensive Guide for Regional Planning and Measuring Progress in the 21st Century, Greater Washington 2050 Coalition, January 2010.
[2] City of Alexandria Comprehensive Transportation Master Plan, March 21, 2008.
[3] Draft Environmental Impact Statement, Screening Process; Section 2.2.1 Alternatives Identified During the EIS Scoping Process.

the Potomac Yard area but would serve only a small portion of the existing and potential transit users due to the limited service of commuter rail that serves only peak period, peak-direction commuter trips.)

- Bus Alternative – changes to area bus routes and improvements to the transportation network to support increased trips within the corridor and improve access to existing stations of the regional Metrorail station (did not establish a new access point to the regional Metrorail system.)
- Parking Garage Alternative – construction of a parking deck located along Route 1 to accommodate trips with a destination in Potomac Yard (did not improve local or regional transit accessibility of the Potomac Yard area).

Through this multi-year, multi-agency review process leading to this point, a robust set of alternatives to constructing a new Metrorail station at Potomac Yard has been considered. None provide a practicable alternative to the proposed Project. The City relies on and incorporates by reference the discussion of these off-site alternatives in the D/FEIS. *See*, *e.g.*, DEIS §§ 2.2, 2.3, 2.5.

b. Provide additional details concerning the North Potomac Yard Small Area Development Plan (NPYSAP) referenced in the project purpose. The application does not sufficiently provide the details of the NPYSAP and the CDD#19 to support the alternatives analysis as based on consistency with the NPYSAP. All alternatives appear to support redevelopment in the Potomac Yard area – obtaining required rezoning or special use permits is not in itself a reason to preclude an alternative from being practicable.

RESPONSE: To better understand how the NPYSAP and CDD support the alternatives analysis, it is helpful to understand the overall planning process used in Alexandria. Figure 2- Planning Process depicts the overall planning process and regulatory steps used in Alexandria. The Small Area Plan sets the vision and objectives for the area. Zoning builds on that vision and adds details such as density and land uses. The CDD zoning defines the broad land use categories of specific land uses, density, building heights and open space requirements. The CDD special use permit provides a more detailed framework for elements such as new streets, open spaces-parks, infrastructure, phasing streets, and design guidelines. The layout of North Potomac Yard and land uses in the vicinity of the proposed Metro station is shown in Figure 3-Land Uses.

A Metrorail station is needed to serve Potomac Yard generally, but the land available for redevelopment is primarily on the northern end of that area, in North Potomac Yard (also called Landbay F). Restrictions on building heights in the southern portion of Potomac Yard caused by its proximity to the Reagan National Airport limit opportunities for high-density growth (Figures 4 - 5 FAA Restrictions and Building Heights). While the southern end of Potomac Yard will be serviced by the proposed station to some extent, that area is largely built-out already. (Figure 6 – Development Status). Thus, the area with the opportunity for high-density, mixed-use development to be supported by walkable access to the proposed Metrorail station is the northern end of the Potomac Yard. This, in turn, makes it imperative that the proposed station be ideally situated to support and promote development in North Potomac Yard. The NPYSAP and Coordinated Development District (CDD) #19, which can be found on the City's website at alexandriava.gov/Potomac Yard Plan, detail why it is necessary for the station to be located as close to the North Potomac Yard as possible. These documents have also been provided to the Department of Environmental Quality (DEQ) digitally.

For Alternative B, the Small Area Plan, CDD zoning and CDD special use permit have been approved by the City. The remainder of the potential Metrorail station alternatives would require a

Master Plan amendment and a CDD special use permit approval and involve a substantial community input. The Development Special Use Permit (DSUP) is project specific and details for each building such as architecture, open space design, stormwater, streetscape improvements, and parking.

The NPYSAP was adopted by City Ordinance 4673 on June 12, 2010 and updated in 2017. It envisions North Potomac Yard as an environmentally and economically sustainable and diverse 21st century urban, walkable, transit-oriented, mixed-use community that completes a vital link in the open space and transit networks in the City. The land use strategy of the plan is fundamentally based on proximity to the Metrorail station, high-capacity transit and market conditions. Indeed, the plan notes: "*Without a Metrorail station, the Plan does not work and is not feasible*." (NPYSAP 112) (emphasis added). The Plan emphasizes a balanced mix of uses overall, while concentrating office uses near the Metrorail station to make the sites attractive to potential tenants and maximize transit use by workers.

More specifically, the NPYSAP is predicated on the conclusion that the success of the development plan depends on a Metrorail station located in proximity to the developable land in North Potomac Yard in an area called the "Metro Square Neighborhood":

> The urban design framework plan . . . provides the basic structure for an interconnected series of streets, blocks, and parks. The required street grid is based on Alexandria's historical pattern of pedestrian-scale blocks, with expected variations in the street grid pattern at the Metrorail station and Crescent Gateway Park to create a distinctive and memorable street pattern at these visually prominent locations. *The Metrorail station serves as a focal design element for the Metro Square neighborhood*.
> . . . .
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> This neighborhood is the transit hub of North Potomac Yard, where the Metrorail station, dedicated high-capacity Metroway, local and regional bus services, and bike lanes will converge. Two important public spaces define the character of the neighborhood: Metro Plaza and Metro Square Park. . . The neighborhood is characterized by a mix of uses, but will be predominantly office with ground floor retail. In addition, uses such as entertainment and/or live performance arts are encouraged. An entertainment district could provide a unique identity for this neighborhood and would differentiate this new town center from others in the region. The entertainment and theater uses can utilize the office parking during the evening hours, and add evening activity within the neighborhood. (NPYSAP 16, 21- emphasis added).

The plan lays out several reasons why the Metrorail station should be located nearest North Potomac Yard, at the location of Alternative B (NPYSAP 26). The first is that this position is necessary to "maximize development in proximity to the Metrorail station." (NPYSAP 39). The increased office space also supports the development of ground-floor retail and encourages other uses such as entertainment and live performance arts (NPYSAP 33).

Locating the metro station at Alternative B (Figure 7 – Alternative B) puts the station within walking distance of the greatest potential concentration of density. In recent years, the office market has been highly competitive, with Metrorail proximate locations (0.25-mile walking distance) significantly preferred over non-Metrorail. Based on a study by Jones Lang LaSalle, Costar Group

and Delta Associates[4], of the 5.5 million square feet (sf) of office under construction in the region, about 4.6 million sf, or 84%, is within 0.25 mile of a Metrorail station. Therefore, the location and amount of available office within a 0.25 mile of the future metro station is critical to the economic sustainability of the City. For example, 1,398,000 sf of office use is within a 0.25 mile of Alternative A, while 3,043,000 sf of office uses are within a 0.25 mile of Alternative B. Alternatives D and B-CSX would result in less as the stations displace developable land. The reduction of 1,093,700 sf of office space within the 0.25 mile radius between Alternatives A and B would be result in a reduction of tax revenue of approximately $6.5 million (using 2018 tax rate and 2017 property values)[5]. In the 40-year lifespan of the Project, this would result in approximately $260 million reduction in tax revenue for the city.

The NPYSAP recognizes that the plan and CDD zoning could not be amended to add additional density and height adjacent to Alternative A. Where the developable land is limited, the only way to increase density is to increase building height, which is not possible in the area closest to Alternative A. This is due primarily to Federal Aviation Administration (FAA) restrictions on hazards to navigation, which are depicted in Figure 4 – FAA Restrictions. These FAA height limits are in place because of the arrival and departure requirements of the runway at the adjoining Ronald Reagan National Airport.[6] Because of the flight path restrictions, the building heights cannot be increased to add density (Figure 5 - Building Heights). The issue of added density and height is not about a rezoning or special use permit; it is prohibited by the FAA because of the runway of the adjoining airport.

The following Summary of Alternatives Table was created by the City's Department of Planning and Zoning and is based on approved land use plans for Potomac Yard, as of January 2019. These figures are more current that the figures used in the D/FEIS or other previous estimates of land use, revenue, or ridership. The table explores the differences in office and residential space along with tax revenue based on each alternative and the 0.25-mile and 0.5-mile distances from each station.

[4] https://planitmetro.com/2015/04/22/vast-majority-of-new-office-in-region-near-metro/
[5] The square footage and tax revenue projections were developed by the City's Department of Planning and Zoning.
[6] The FAA's restrictions on obstructions to air navigation extend out from airports in regulatorily defined "imaginary surfaces." 14 C.F.R. § 77.17. The City understands that there are efforts underway to alter the approaches to the Reagan National Airport to minimize sound impacts on local residents. The City does not anticipate that those efforts, irrespective of the outcome, will affect the FAA's regulatory restrictions on construction within close proximity to the airport which are applicable to the Potomac Yard area.

Summary of Alternatives

Alternative	Uses (¼ mile and ½ mile walkshed) in square feet		Tax Revenue		Time + Fiscal Impact	Zoning + Permitting Cost	Permitting Cost	Population (Employees and Residents) *	
	Office	Residential	Office	Residential				Office	Residential
Alt A ¼ mile	1,398,000	2,108,400	$5,529,090	$9,847,634	N/A - Zoning cannot be amended to add additional height due to FAA flight path restrictions	N/A - Zoning cannot be amended to add additional height due to FAA flight path restrictions	$ 20,000	4,893	4,301
Alt A ½ mile	3,783,000	4,327,150	$14,106,807	$18,580,782				13,240	8,827
Alt B ¼ mile	3,043,000	1,422,250	$12,035,065	$6,642,856	Can proceed with current approvals – no delay – no loss in tax revenue	$0	$12,400,000	10,650	2,901
Alt B ½ mile	4,140,000	6,126,500	$15,438,060	$26,307,191				14,490	12,498
Alt B-CSX ¼ mile	1,782,000	2,526,000	$7,047,810	$11,798,104	Time Delay: 60-84 months. Loss of tax revenue: $4,600,000 - $6,500,000	$650,000 - $850,000	$0	6,237	5,153
Alt B-CSX ½ mile	3,940,000	4,521,875	$14,692,260	$19,416,931				13,790	9,224
Alt D ¼ mile	3,010,000	2,476,000	$11,904,550	$11,564,571	Time Delay: 60-84 months. Loss of tax revenue: $4,600,000 - $6,500,000	$650,000 - $850,000	$300,000	10,535	5,051
Alt D ½ mile	3,840,000	4,398,250	$14,319,360	$18,886,086				13,440	8,972

* Notes:
Residential population is based on average unit size of 1,000 SF and 2.04 residents per unit
Employee population is based on 3.5 employees per 1,000 SF of office.

A fundamental premise of North Potomac Yard is to integrate a Metrorail station within the site to maximize ridership. By integrating the Metrorail station immediately adjacent to the planned development, it integrates land use and transportation (Figure 3-Land Uses) while also creating a safe and attractive access to the future Metrorail station. As shown in the Summary of Alternatives Table, Alternative B enables a higher amount of office within a 0.25 mile of the Metrorail station and includes the most development within a 0.5 mile of all the alternatives.

Alternative B: Locating the Metrorail station at Alternative B puts the station within walking distance of the greatest potential concentration of office uses and total development. The office market is highly competitive, with Metrorail proximate locations (0.25-mile walking distance) significantly preferred over locations outside of a 0.25 mile or locations without a Metrorail station (Figure 7 – Alternative B). The location and amount of available office within a 0.25 mile of the future Metrorail station is critical to the economic sustainability of the City.

The small area plan, CDD zoning and CDD special use permit do not need to be amended to implement this alternative

Alternative A*:* For this alternative 1,398,00 sf of office use is within a 0.25 mile of Alternative A, while 3,043,000 sf square feet of office uses are within a 0.25 mile of Alternative B. Alternative B has 1,645,000 ft more office development within a 0.25 mile compared to Alternative A. Alternative A has 2,156,350 sf less total development than Alternative B within a 0.5 mile of the Metrorail station. This would be a reduction of $9,057,662 in tax revenue for the City[7].

For reasons out of the control of the City, the small area plan and CDD zoning cannot be amended to add additional height adjacent to Alternative A due to the Federal Aviation Administration (FAA) building height restrictions. As depicted in Figure 8 – Alternative A the area adjacent to Alternative A is limited by Federal Aviation Administration (FAA) Flight Path Building Height Restrictions. These FAA height limits are in place because of the arrival and departure requirements of the runway at the adjoining Ronald Reagan National Airport. Because of the flight path restrictions, the building heights cannot be increased to add additional building height. The issue of added density and height is not about a rezoning or special use permit; it is prohibited by the FAA because of the runway of the adjoining airport.

Alternative B-CSX: This alternative B-CSX has 1,804,625 sf less than Alternative B within a 0.5 mile of the Metrorail station. This would be a reduction of $ 7,636,060 in tax revenue for the City.

This option will also involve a significant delay of 60-84 months to coordinate with CSX on the possible track alignment. Finally, CSX may never agree to the reconfigured track alignment for this alternative. This option results in the total loss of approximately 600,000 sf of development in North Potomac Yard with actual land lost to the track relocation (Figure 9 - Alternative B-CSX)).

Alternative D: This alternative will reduce the amount of development by 2,028,250 sf within the ½ of the Metrorail station compared to Alternative B. This would be a reduction of $ 8,539,805 in tax revenue for the City.

Alternative D would have a comparable amount of office within the 0.25 mile of the Metrorail station, compared to Alternative B, while the total amount of development within 0.5 a mile is reduced by 2,028,250 sf compared to Alternative B. In addition, this alternative occupies a significant area in North

[7] Note: All tax revenue projections are based on the 2018 tax rate and 2017 assessed values.

Potomac Yard, reduces overall development, and has design impacts inconsistent with the vision for North Potomac Yard (Figure 10 – Alternative D).

c. Section 3.3.1.5 indicates that an alternative is considered practicable on the basis of cost if 1) the cost was fully assessed considering all components of land acquisition and construction, and 2) the cost is within 20% of the proposed alternative. As part of the alternatives analysis the cost should be fully assessed using available information; and if information is not available, then reasonable assumptions must be used. After considering the specific information requested in this letter, provide the following information on cost and financial feasibility:

i. Provide a more detailed accounting of the cost associated with each alternative and how that would affect the practicability of the project based on financial feasibility.

RESPONSE: As part of this additional information response, costs were reviewed in greater detail than provided in the 2014 estimates created for the NEPA documents. The Potomac Yard Metrorail Station Alternatives Cost Review 2019 (attached) summarizes Rough Order of Magnitude (ROM) costs comparing Alternatives A and B. The cost for Alternative B is based on the competitively bid scope for the current Design-Build contract, which is used as a benchmark for the theoretical costs of building a functionally similar station at Alternative A's location.

There was no need to further refine the previous costs estimates for Alternatives B-CSX and D because they were already substantially higher than either Alternative A or B, with Alternative B-CSX being 31% higher and Alternative D being 84% higher than Alternative B. Any further assessment of ROM costs would escalate these costs higher given updated cost information and assumptions, meaning that there would be no change in the conclusion that these alternatives are impracticable as a matter of cost.

Six (6) components of construction were itemized for the comparison of Alternatives A and B, including A. Protective cover; B. Geotechnical/Foundation Systems; C. Hazardous Materials; D. Restoration of Temporary Wetland impacts; E. Stormwater System; and F. Savings for using existing traction power, track and ATC. Twenty-one (21) individual costs were estimated for each of these 6 items, resulting in the following table. The final ROM cost estimate for Alternative A is $237.6 million compared to the competitively bid contract for Alternative B of $214.2 million; a difference of $23.4 million (10.9%).

The Design-Build cost of constructing a functionally similar station at the Alternative A site will be **$23.4M** or **10.9% more expensive** than constructing the same components at the Alternative B location.

Table 1 - Potomac Yard Metrorail Station Alternatives Cost Review 2019

ITEM		ALT B ($M)	Topic A	Topic B	Topic C	Topic D	Topic E	Topic F	ALT A ($M)	*Var. ($M)*	*% Var.*
	Design-Build Contract Scope	**214.2**	**20.0**	**6.3**	**8.0**	**-0.7**	**0.6**	**-10.8**	**237.6**	***23.4***	***10.9%***
1	Mobilization	3.0							3.0	*0.0*	*0.0%*
2	General Conditions	22.5	9.0	0.5	0.7	-0.1	0.1	-0.5	32.2	*9.7*	*43.1%*
3	Sitework	26.0					0.5	-1.0	25.5	*-0.5*	*-1.9%*
4	Site Restoration and Mitigation	1.0				-0.6			0.4	*-0.6*	*-60.0%*
5	Station Structure	38.7	10.0	5.0					53.7	*15.0*	*38.8%*
6	Station Finishes	17.3							17.3	*0.0*	*0.0%*
7	AC Room Building	3.2							3.2	*0.0*	*0.0%*
8	Pedestrian Bridge and Pavilion	17.3							17.3	*0.0*	*0.0%*
9	Design Items 3 through 11	24.9	1.0	0.8		-0.1	0.1	-0.1	26.5	*1.6*	*6.6%*
10	Traction Power	15.4						-3.0	12.4	*-3.0*	*-19.5%*
11	Communications	7.4							7.4	*0.0*	*0.0%*
12	Automatic Train Control	12.3						-6.2	6.2	*-6.2*	*-50.0%*
13	Hazardous Waste	0.5			2.6				3.1	*2.6*	*523.6%*
14	PCB-Contaminated Soil	0.6			3.6				4.2	*3.6*	*595.0%*
15	Petroleum-Contaminated Soil 1	0.1			0.5				0.6	*0.5*	*544.0%*
16	Petroleum-Contaminated Soil 2	0.1			0.5				0.6	*0.5*	*544.0%*
17	Permitting Allowance	0.1							0.1	*0.0*	*0.0%*
18	Utility Allowance	0.3							0.3	*0.0*	*0.0%*
19	Conduit, Cable Troughs & Duct Bank	11.0							11.0	*0.0*	*0.0%*
20	Hydraulic Elevators	4.7							4.7	*0.0*	*0.0%*
21	Optional Pedestrian Ramp	7.8							7.8	*0.0*	*0.0%*

TOPIC

- **A.** Protective Cover
- **B.** Geotechnical/Foundation Systems
- **C.** Hazardous Materials
- **D.** Restoration of Temporary Wetland Impacts
- **E.** East Side Stormwater System
- **F.** Savings for using existing traction power, track, and ATC

ii. What is the premise for stating that cost should be within 20% of Alternative B for an alternative to be considered practicable?

RESPONSE: An alternative is not practicable if it is "unreasonably expensive to the applicant." 45 Fed. Reg. 85336, 85343 (Dec. 24, 1980); *see also* DEQ, Guidance Memo. 04-2007 at 3. Neither the Corps nor DEQ regulations fix a bright line threshold for when an alternative becomes "unreasonably expensive," and therefore impracticable. One accepted method for determining this threshold is to evaluate whether the costs of the various alternatives are "substantially greater than the costs normally associated with the particular type of project."[8]

[8] Another accepted method to evaluate the practicability of alternatives on the basis of cost is to compare the relative returns on investment. An alternative that that has a "substantially lower" investment return may be excluded as impracticable. DEQ, Guidance Memo. 04-2007 at 4. As noted in Table 1 – Summary of Alternatives, there is a substantial difference in the City's "investment return" – meaning, in the case of the City, its tax revenues – between

Corps, RGL 93-02.
Ascertaining the "normal" cost for Metrorail stations is challenging because there are few comparable examples to draw from. Comparisons to rail stations in other transit systems is difficult because costs are largely driven by very localized factors, including the setting, available space, type of station, and relevant station and track design standards for the system. Similarly, the cost of historical Metrorail station construction may not be "normal" for the present day because station design is substantially affected by evolving WMATA design standards that entail greater costs, including updated requirements to ensure that stations are safe and accessible to all passengers. Modern stations must include many features and amenities that were required for older stations.

The six Metrorail stations currently under construction for Phase 2 of the Dulles Corridor Metrorail Project (DCMP) provide the best basis for comparing "typical" or "normal" Metrorail station construction costs. Five of those stations are at-grade stations similar to the proposed PYMS and are considered comparable examples for the purpose of this analysis. The sixth station, the Dulles Airport Station, is a unique aerial station that involves a number of atypical considerations and costs necessary to integrate the station into the existing airport facilities. It is not considered a comparable example.

Many variables factor into the total cost for a Metrorail station. To allow for a reasonable comparison, the project team focused on the design-build costs associated with the site work and station construction for the five at-grade Phase 2 DCMP stations. Those costs were compared to the proposed PYMS. The costs associated with these parameters for each of the five DCMP stations was approximately $60 million per station. The comparable costs for the proposed PYMS station at Alternative B are approximately $80 million—an increase of 33%.

The construction costs of the proposed PYMS are substantially greater than the costs associated with other comparable Metrorail stations. For that reason, any material increase in cost above the cost of the preferred alternative for the PYMS is considered unreasonably expensive. Twenty percent was selected as the threshold for unreasonable expense. Twenty percent is twice the standard construction contingency of 10% and therefore represents a substantial and material increase in costs even after accounting for potential uncertainty in the cost estimates. Any alternative that has a cost that is more than 20% greater than the cost of the preferred alternative (Alternative B) is, by extension, considerably more expensive than a comparable "typical" or "normal" Metrorail station. Any such marked increase in costs over the already-costly proposed station represents an unreasonable expense to the City.

iii. *Address secondary costs such as the cost of permitting and cost of zoning associated with each alternative, and when such costs are avoided given a specific alternative?*

RESPONSE: Alternative B: No re-planning or zoning amendments are necessary. Submissions for individual building approvals and construction can proceed with the existing City approvals. Alternative B requires an Individual Permit from the US Army Corps of Engineers (Corps) and DEQ, along with mitigation for wetland and National Park Service (NPS) impacts.

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the varies alternatives. The City stands to realize a substantial increase in tax revenue from a new Metrorail station at Alternative B as compared to any other station location. For example, the City would lose approximately $9M in tax revenues annually if the station is built at Alternative A rather than B. *See* Response 2.d. This is a significant cost to the City that adversely affects the practicability of all alternatives

Alternative A: Theoretically, the small area plan and zoning for both North and South Potomac Yard could be amended, but not to the point of recouping the lost density provided with Alternative B. Because of the FAA building height restrictions adjacent to Alternative A, there would be a reduction 958,850 sf of total development within a 0.25 mile of the Metrorail station compared to Alternative B. This would also significantly reduce the amount of office within the 0.25 mile of the Metrorail station from 3,043,00 sf. in Alternative B to 1,398,000 sf in Alternative A. In addition to the inability to change building heights because of the FAA building height restrictions, the majority of the blocks around Alternative A have already been recently constructed (Figure 7 – Alternative A) and these blocks and uses cannot be amended. Alternative A would need permits from the Corps and Department of Environmental Quality (DEQ) for minor wetland impacts.

Alternative B-CSX: The North Potomac Yard small area plan and CDD zoning would need to be amended, requiring a 12- to 18-month delay for a community involvement process. This alternative would result in a loss of density 1,804,625 sf compared to Alternative B due to the land area occupied by the B-CSX option, which will reduce the amount of development in close proximity to the Metrorail station (Figure 9 – Alternative B-CSX). Developable land would be lost due to the positioning of the relocated tracks. Because of the existing taller building heights on the site, the market would likely not support additional taller buildings on the remainder of the site, resulting in the reduction of 600,000 sf of development in North Potomac Yard. In addition, the location of the smaller scale neighborhoods to the west (Del-Ray, Lynhaven and Hume Springs) it would not be appropriate to provide taller buildings on the western portion of the site. The current North Potomac Yard Small Area Plan provide building heights that step down and provide building height transitions to the existing neighborhoods. In addition, building heights on the eastern portion of the site are reviewed by the National Park Service (NPS) because of the George Washington Memorial Parkway and taller heights than the current North Potomac Yard Plan would likely not be supported by the NPS

On present information, Alternative B-CSX does not appear to require any permits from the Corps or DEQ. Although not a permit per se, the City would need to undergo a lengthy review and approval process to locate a station on CSX's existing tracks. The City does not have the authority to condemn CSX property, and CSX would be under no obligation to grant the City's request to obtain CSX's easement. The City also likely would be responsible directly (or indirectly for costs) for obtaining all necessary permits and approvals to facilitate the relocation of CSX's tracks, included the condemnation of high-value developable land that would be occupied by the new CSX tracks.

Alternative D: The North Potomac Yard small area plan and CDD zoning would need to be significantly amended, resulting in a 60-84 month delay for an extensive re-planning community process, primarily because of the CSX involvement. This alternative would reduce the density within Potomac Yard by 1,000,000 sf of development because of the land area occupied by the alternative. Figure 10 – Alternative D depicts the area of developable land in North Potomac Yard that would be occupied by construction of this station. Alternative D would require permits from the Corps, DEQ and Virginia Marine Resources Commission (VMRC) for the bridged crossing of Four Mile Run, along with mitigation for wetland, stream, and tidal impacts.

The cost for each an amendment to for each alternative (excluding Alternative A, which cannot be amended) would range from $650,000 to $ 850,000 for consultants each Alternative. Also 1.5 full time staff would need to be dedicated for a cost $250,000. The total cost for each alternative (excluding A) would be $900,000 - $1,10,000. This rezoning effort could not increase the density of Alternative A, B-CSX or D to the level of Alternative B due to the loss

of developable land, FAA height restrictions, and/or decrease in developable land within walking distance of the station.

Permitting costs for Alternatives B and D would be similar, with Alternative B having wetland impacts and Alternative D having a major tidal stream crossing in addition to wetland impacts, with consultant fees estimated at $200,000 for permitting and coordination, plus mitigation costs estimated at $200,880 for Alternative B (included in cost estimate table in Response 1ci) and $100,000 for Alternative D. In addition, Alternative B requires $12 million in mitigation to the NPS for impacts to NPS land and easements plus the restoration of temporary impacts. Alternative A impacts a smaller amount of wetlands and might use a 17-SPGP-01 permit from the Corps with a General Permit from the DEQ. Mitigation might not be necessary if impacts remained under 0.1 acre. Alternative B-CSX does not require permits or mitigation, to the City's knowledge.

Alternatives A, B-CSX, or D would require significant and lengthy approvals and coordination. This would likely delay the construction of the Metrorail station by 5-7 years. This would result in significant lost tax revenue and substantially delay use and ridership of the Metrorail station. This financial impact is far greater than the rezoning or permitting costs of any alternative. The Summary of Alternative table details these factors.

iv. Is the financial analysis based on the location of Alternative B and associated attendant infrastructure? For example, if the zoning were changed to accommodate residential and employee pedestrian traffic to the other alternatives, how would this affect the financial feasibility of the alternatives?

RESPONSE: The financial analysis is based on Alternative B. However, as outlined below, because of the site constraints and market limitations, all of the other alternatives have less office development within a 0.25 mile of the Metrorail station and less total development within 0.5 mile of the Metrorail station, which is inconsistent with the need and purpose of the Metrorail station to maximize office uses within a 0.25 mile of the Metrorail station and to maximize density and ridership for the Metrorail station.

As outlined within response 1b, additional density cannot be located adjacent to Alternative A as a result of the FAA flight path height restrictions and the fact that much of the area in the southern area of Potomac Yard nearest Alternative A is already developed. Figure 8 shows Alternative A and the FAA building height restrictions, along with the 0.25 mile walkable area.

Alternative B-CSX would be comparable to Alternative A, and its construction would result in a substantial loss of developable area. Figures 8-9 (Alternative A and B-CSX) show Alternatives A and B-CSX and the FAA restrictions, along with the 0.25-mile walkable area. Alternative B-CSX would reduce the total amount of development by 1,804,625 sf within a 0.5 mile of the Metrorail station compared to Alternative B which could not be relocated to other locations on the site. This reduction of development result in a loss of $7,636,060 in tax revenue for the City.

Alternative D was determined to be financially infeasible based on a number of factors. First, the office square footage would result in a significant time delay of 5-7 years and would result in the loss of 2,028,250 sf of development, compared to Alternative B, reducing the development area and displacing office square footage. As shown in Figure 10 (Alternative D) multiple buildings within the development area would be lost to the station and track placement, and additional development

opportunities may not be realized by changing the vision of the proposed area with the introduction of an aerial station and tracks bisecting the building locations. This reduction in development would be counter to the purpose and need of the Metrorail station and would significantly reduce the tax revenue to the City. In addition, to significant land area that would be impacted and the reduced amount of development, this alternative would have significant design implication for the surrounding buildings because this alternative requires a substantial aerial structure within North Potomac Yard, which is inconsistent with the urban, pedestrian-oriented vision for North Potomac Yard. In addition, the cost of constructing Alternative D is substantially higher given the aerial track than the less expensive A and B alternatives. Given the difficulty of financing even the least expensive alternatives, this higher cost is a significant obstacle.

d. Initial Screening of Alternatives Report (2011) Section 3.1.1 indicated that Alternatives C1, C2, D1, D2, and D3 at-grade options did not pass initial screening because they were not consistent with development plans. However, the alternatives appear to support redevelopment of the Potomac Yard area. Can zoning be modified to accommodate one of these alternatives? Did engineering factors contribute to their elimination as practicable alternatives? Provide further explanation.

RESPONSE: As noted in this question, the Initial Screening of Alternatives Report stated that Alternatives C1, C2, D1, D2, and D3 at-grade were screened from further consideration on the basis that they were not consistent with development plans. However, those alternatives were nevertheless evaluated for technical feasibility and constructability. The report found that Alternatives C1, C2, D1, D2, and D3 at-grade did not meet the technical criteria for construction of a Metrorail station at those locations due to insufficient vertical alignment geometry. There was insufficient space available for the Metrorail tracks to clear the CSX tracks at a sufficient elevation and accommodate construction of a station on the western side of those tracks. Please refer to Initial Screening of Alternatives Report, Appendix A: Analysis of Technical Feasibility of Alternatives, at A-12 to A-14.

Alternatives C1, C2, D1, D2, and D3 at-grade have elements that adversely limit the amount and type of development that can occur. For example, these alternatives involve the construction the station and new tracks within the most valuable developable land in North Potomac Yard. This has the same effect as Alternatives B-CSX and D of causing large swaths of this limited resource to become undevelopable. Rezoning the area would not eliminate that problem. Thus, even if these alternatives were technically feasible (and otherwise practicable), they still would not meet the project purpose.

e. Expand on how Metrorail ridership was calculated and how these numbers preclude an alternative as practicable.

RESPONSE: The ridership and avoided automobile trip projections do not necessarily preclude any alternative as impracticable in terms of cost, logistics, or technology, but this was not a criterion upon which practicability was judged in the Joint Permit Application. Rather, these projections are relevant considerations for whether a given alternative meets the overall project purpose, as well as for the overall environmental and public benefit of a given alternative.

Rail ridership for the station is defined as weekday boardings. As noted in Volume I - Final Environmental Impact Statement and Final Section 4(f) Evaluation, June 2016, the ridership was

projected for the year of opening (2020) and a longer horizon year of 2040. The ridership projections use regional travel patterns based on land use (population and employment) densities at the Transportation Analysis Zone (TAZ) level. Travel demand forecasting for the proposed Metrorail station was conducted using the MWCOG regional travel demand model (Version 2.3.57a, 2015) and employed the current Washington Metropolitan Area Transit Authority (WMATA) transit post-processor application (Version 2.3, 2012), which was developed to support the WMATA Regional Transit System Plan. The key factors influencing transit ridership in the model are travel time, walkability (estimated at a broad level by the density of the street network), and land use.

Future land use was based on the regionally adopted land use forecasts (MWCOG's Round 8.4 Cooperative Land Use). The land use forecast resulted in a ridership forecast of 5,000 for the opening year (2020), and 11,300 for year 2040 for Build Alternative B, which is approximately 13% more riders than any other build alternatives considered in the Draft EIS.

The projected increase in ridership alone does not tell the entire story. *Access* to Metro is itself a valuable amenity that facilitates the co-location of other amenities (e.g., retail, entertainment) and increases market value for surrounding properties. (NPYSAP 115) The benefit to the City and its residents is not derived from increased Metrorail fares, but from the increased value, rent, and tax revenue in Potomac Yard that will flow from the presence of a strategically located Metrorail station.

The high-density development planned for Potomac Yard also is dependent on providing public transit as an alternative to commuting by automobile. Among other reasons, the benefits of high-density development are eroded by an increase in traffic congestion, which has an adverse impact on the environment, quality of life for residents and workers, and property values. Thus, an equally important metric is the projected number of daily automobile trips that will be shifted to transit for each alternative. Projected automobile trips avoided for each alternative were determined by MWCOG model.

Alternative B produces the greatest increase in avoided automobile trips by a wide margin. The Preferred Alternative (B) is projected to result in a shift of about 6,700 daily automobile trips to transit by 2040 when compared to the No Build Alternative. Alternative B's projected shift of trips to transit is about 29 percent greater than any other alternative.

2. ***Alternative A***

a. Track Station and Design Standards/Constructability/Safety of Workers and General Public. Section 3.2.1.1 indicates that Alternative A would require significant time delays and cost to construct the protective shell in order to work on-line. Please explain:

i. How a time delay limits the practicability given that the project is to serve a future development.

RESPONSE: Redevelopment of North Potomac Yard is a complicated process within many moving pieces that must be sequenced correctly. The timing and phasing of the new Metrorail station are critical to meeting the goal of maximizing high-density and high-value redevelopment of the North Potomac Yard. Delaying construction of the station substantially delays future development, which results in significant lost tax revenue for the City and may cause the City to miss taking advantage of economic opportunities, such as those that are being

generated now by Amazon's HQ2 and the new Virginia Tech Campus. As stated in the NPYSAP:

> It is important to understand the degree to which the implementation and infrastructure components of the Plan are interrelated and depend on one another for their success. The required infrastructure and development must also be carefully phased. The transportation and circulation through the site are based on the provision of a Metrorail station and dedicated transit. Without a Metrorail station, the Plan does not work and is not feasible. The success of the residential neighborhoods will depend on the viable retail and commercial uses which will provide convenient access to goods and services. Open space and design excellence add value but will also add amenities for the workers, residents, and visitors. Without all the necessary infrastructure improvements and amenities working together and phased appropriately, potential tenants, residents, and retail patrons will go somewhere that does provide the desired level of infrastructure improvements and amenities.
> . . . .
>
> As is often the case with large, complex, urban infill redevelopment efforts, in the initial years of planning and construction, a large proportion of overall costs must be incurred and revenues follow much later. At North Potomac Yard, this is particularly true as a result of the significant infrastructure improvements, such as the Metrorail station, that must be made in the early phases to support the planned development.

NPYSAP 112–113.

The majority of the planned and approved development will not move forward until the Metrorail station has received its approvals and construction has started. The need for the Metrorail station to be complete or under construction is essential to enable the market to proceed with the planned development, and the office development in particular. While the adjoining property owners understand that a Metrorail station is planned and under consideration, the construction of the Metrorail station is what is necessary to spur the planned transit-oriented development. For example, a delay of a first phase of two residential buildings and an office building totaling approximately 800,000 square feet will result in the loss of approximately $ 2,881,500 in tax revenue.

Because of the Amazon and Virginia Tech announcements to be located nearby, there is a significant opportunity now to attract new commercial development to Potomac Yard, which is fundamental component of the City's economic development strategy. That non-residential development can be accommodated elsewhere in the region, so it is possible that a delay in the station construction will not just delay development, it will mean Alexandria misses taking advantage of a major economic development opportunity entirely.

ii. What is the estimated cost of the protective shell?

RESPONSE: Based on the Alternatives Cost Review discussed in more detail in the Response 1.c.i, the protective shell construction will add $20 M to the project cost.

iii. Is the technology for this method of construction readily available? Is this technology and construction method being used in other rail line, Metrorail line, and Metrorail station projects that have occurred and/or are occurring across the region?

RESPONSE: Constructing Alternative A using an "in-line" technique and protective shell is a new, theoretical, and unproven approach that has been developed by the Project Team as the most reasonable solution to mitigate the risk of constructing a rail station over and around active passenger rail tracks. It has never been attempted for a Metrorail station. Moreover, none of the professionals associated with the Project (with many decades of combined construction experience) could identify a heavy rail station ever being constructed in this manner. The "in-line" technique proposed involves building the station over the active Blue/Yellow Lines which remain in the current alignment. The Project Team's experience on other rail station projects involves building the station "off-line" or as a new extension to an existing line. "Off-line" means building the station adjacent to the existing active line and then transferring train traffic through the new station after the new lines are completed and safety certified. This "off-line" technique is being implemented on Alternative B and would be the approach used for Alternative B-CSX and Alternative D also.

Constructing an "in-line" station presents the unique challenges of maintaining a safe environment for construction workers, project staff, and Metro passengers while constructing a new 850-foot long station over and around a very active Metrorail line. This situation presents numerous safety hazards that would be present for the multiple years it would take to construct the station. Extraordinary safety mitigation measures would be necessary to mitigate the safety hazards listed above. WMATA's vision included in the D/FEIS for building a station at the Alternative A location involved constructing a protective structure over the line during construction.

The challenges to safely operating a Metro station construction site around an active, electrified transit track include:

- The 750 volts of Direct Current (DC) electricity present in the third rail on both sides of the track will certainly cause death to any persons who come in contact with the rail, but current of this magnitude can also kill by 'jumping' (meaning you don't have to touch the third rail to get electrocuted because it can arc like lightning over short distances). The current also would travel through any piece of equipment made of conductive material that may inadvertently touch the third rail. Although this risk will be present for the duration of the project, the protective structure helps mitigate the risk by creating a physical barrier between the workers and the third rail.
- In most circumstances, the WMATA trains cannot stop in time to avoid catastrophe if the track is "fouled" by falling debris, equipment, or construction workers. Even an object as small as a hammer, if dropped on the tracks, has the potential for fouling the tracks. With over a hundred construction workers working adjacent to and above the active tracks, this presents an unacceptable level of risk without mitigation.
- Multiple crane picks over several years means that even equipment that is positioned tens of feet away from the tracks can fail (e.g., tip over) and foul the tracks. Although precautions can be taken, without mitigation there is still a risk of fouling from equipment and slung loads.
- Having an active rail line bisecting the construction site makes it much more challenging to move workers and equipment around the site.

- Without mitigations, the extreme precautions necessary to work adjacent to an active track slow the production of the crews to the point that the cost and schedule impact becomes insurmountable.

The construction of Alternative A using a protective structure would mitigate, but not eliminate, the foreseeable safety hazards. The protective structure would need to be able to satisfy each of the following criteria:

- Be designed so that it can be quickly constructed and removed during a series of planned single tracking or weekend shutdowns to minimize the disruption of train traffic and meet WMATA's standards for shutdowns.
- Be sufficiently robust to protect against track fouling by materials, equipment, construction workers. That is, it must be completely enclosed, so that small construction tools and materials do not foul the line below.
- Be sufficiently strong to withstand the impacts of potentially heavy equipment and materials dropped from a height.

Even with a protective structure in place, this would not eliminate all safety risks and construction-related line closures. Certain hazards—such as the heavy lifting of large structural steel members—will require addition weekend shutdowns or night work because these elements, if accidentally dropped, would make even the strongest protective structure fail.

Specific details on WMATA's original assumption were not made available, but ButlerMatrix's Alternatives Cost Review March 10, 2019 has assumed the following robust solution for this costing exercise. The concept developed involves constructing a series of concrete encased steel "soldier piles" along both sides of the existing track for the entire 850-foot-long station structure. Steel beams would connect these columns longitudinally and across the tracks forming a steel frame to protecting against falling debris. 40- foot-long precast hollow core panels would then be placed on top of the steel structure, and 12- foot-high chain link fence (with gates) would be installed on both sides to discourage fouling of the track and to avoid electrocution from the active third rail. The below-ground portions of the structure could utilize the soldier piles for earth retaining purposes using lumber lagging. The entire structure would need to have a grounding and stray current protection system to protect against corrosion from the WMATA traction power system. All the existing signal and communication circuits would need protection during the installation of the protective structure. Once the station elements are constructed to the point that it is safe to remove the protective structure, the structure could be cut flush with the ground level and the foundations abandoned in place to avoid damage to the surrounding structure.

The Project Team has thoroughly evaluated the cost, logistics, and technology of constructing an in-line station at Alternative A. While it appears technologically *possible* to construct as station in this manner, there remain a host of uncertainties and hazards associated with this untested approach that could jeopardize the success of the Project. The City must have a high degree of certainty that the station can be completed before it mobilizes the extraordinary public resources necessary to commence construction. Alternative A does not provide that degree of certainty. The uncertainties and hazards on constructing an in-line station in this manner—in addition to the foreseeable technological and logistical challenges—render this alternative impracticable.

b. Cost. Section 3.2.1.5 indicates that the cost is anticipated to be substantially higher than currently identified in Table 3-1 and the financial analysis information provided. Please provide

an estimate of the cost and if/how the cost with affect this alternatives' practicability.

RESPONSE: The previous cost estimates of Alternative A which were included in the D/FEIS and JPA were developed in 2014 based on a set of assumptions at that time. Those assumptions included that only minor trackwork, no Traction Power upgrades, and no Automatic Train Control upgrades were needed for this location. These assumptions equated to an assumed $50M-$60M savings for Alternative A versus Alternative B. The current project scope for Alternative B includes a new track, new Automatic Train Control, Communication upgrades, and upgrades to three Traction Power Substations (Potomac Yard, National, and Braddock). Since these assumptions have evolved and are not necessarily site-specific, the Independent Cost Estimate assumes additional track and systems upgrades at the Alternative A location worthy of the $320M investment in a new facility.

The Alternatives Cost Review included six (6) components of construction were itemized for the comparison of Alternatives A and B, including A. Protective cover; B. Geotechnical/Foundation Systems; C. Hazardous Materials; D. Restoration of Temporary Wetland impacts; E. Stormwater System; and F. Extension of Pedestrian Bridge to East Glebe. Twenty-one (21) individual costs were estimated for each of these 6 items, resulting in the cost table presented in Response 1.c.i. The final ROM cost estimate for Alternative A is $237.6 million compared to the competitively bid contract for Alternative B of $214.4 million; a difference of $23.4 million.

The difference in cost, along with the safety and logistics factor, render Alternative A impracticable.

c. Maximum Access to Station/Metrorail Ridership. Currently, it is unclear why access to the station would be significantly reduced between Alternative A and Alternative B.

i. The proposed north entrance to Alternative A and the proposed south entrance to Alternative B appear to be in close proximity. Why would a north entrance to Alternative A have a significant reduction in access to the station?

RESPONSE: The relevant ridership, avoided automobile trips, and development are based on the assumption that a quarter mile is the typically distance that residents and workers will consider walking to a station. Walkable access drops off significantly between one-quarter and one-half mile, with minimal use outside of the half-mile radius. These metrics are vital to the Potomac Yard Metrorail Station because there will be no onsite parking for persons to conveniently access the station by automobile. In addition to the distance, the quality and safety of the walk will be critically important to achieving the highest ridership for the station. Alternative B, provides the best opportunity to maximize ridership because of its close proximity to the planned office uses and highest density area within Potomac Yard.

While the north entrance to Alternative A may appear to be close to the entrance to Alternative B at a glance, the distance between the stations makes a substantial difference in the projections developed by the model (discussed further in Answer 1.e). That model is the best tool available to evaluate projected access and ridership for the respective station locations. Note that the center of the stations is used in the models rather than the station entrance because walking distance required to board a train is the distance to the platform, not the entrance to the station. The center of the station under Alternative B (as well as the north entrance) is located closer to the redevelopment

area of North Potomac Yard, which is where the greatest amount of future land use density will occur. Therefore, common sense suggests, and the model demonstrates, that Alternative B provides access to a larger population and employment base than Alternative A, which is centered further to the south away from the highest volume and density of development. Please refer to Figures 7 and 8 for graphical depictions of the portions of Potomac Yard within ¼ and ½ mile of the respective alternatives.

Alternative B provides additional regional transit choices to the largest number of residents and employees within walking distance of the station when compared to the other alternatives considered in the Draft EIS. Table 1- Summary of Alternatives depicts the number of residents and employees projected for each alternative.

ii. Is the maximum access to the station based on projections for future development which are primarily based on current zoning? If development is not in place nor under construction, can the zoning be modified to increase access to the station for Alternative A? Is it practicable to modify future plans?

RESPONSE: The maximum access to the station is based on projections for future development, which in turn is based on the zoning at the time that the Final Environmental Impact Statement was completed and remains in effect to this date. Alternative B provides additional regional transit choices to the largest number of residents and employees within walking distance of the station when compared to the other alternatives considered in the Draft EIS. Alternative B will provides the greatest amount of density with 0.5 mile of the Metrorail station and the highest number of employees and residents (Table 1 – Summary of Alternatives).

It is not practicable to modify the plans and zoning to increase access to a station at Alternative A. As is discussed further in Response 1.b above, FAA restrictions imposed by proximity to the Reagan National Airport restrict the ability to add density within walking distance of Alternative A by increasing allowable building heights. Additionally, the area within walkable distance to Alternative A (e.g., Potomac Greens neighborhood) is largely developed. The largest area of developable land is farther to the north, much more of which is within walking distance to Alternative B. Changes in planning or zoning cannot move the high-value developable land closer to Alternative A.

iii. What is the significance of Metrorail access versus ridership? Why are they considered separate criteria in the analysis of alternatives?

RESPONSE: The ridership projections are based on regional travel patterns and incorporate land use (population and employment) densities at the Transportation Analysis Zone (TAZ) level. They use the center of the station (rather than station entries) within the Traffic Analysis Zones relative to population and employment. Access to the station, on the other hand, considers whether the alternatives improve regional transit accessibility, provide additional transportation choices or may increase the share of transit or other non-auto trips. Access considers pedestrian, vehicular, transit and bicycle access to station entrances, and considers the ease of accessing the station from surrounding areas. Both are relevant metrics for determining whether an alternative is consistent with the overall project purpose.

As discussed further in Responses 1.b and 2.a.i, *access* to Metrorail is an important and independent factor that serves as a foundation of the NPYSAP. Walkable access to Metrorail is an amenity that

attracts offices, residents, retailers, and entertainment. Metro access increases surrounding property values and office rents, and the resulting tax revenues for the City. Metro access also allows developers to eschew parking garages and other automobile-centered elements that would be necessary if automobiles were the primary or only reasonable means of transportation to and from the area. While ridership projections are an important indicator that a Metrorail station is being used effectively by the community, future developers, businesses, and residents are not attracted by ridership projections; they are attracted by convenient walkable accesses to the Metrorail system.

As noted above, Alternative B performs substantially better than the other alternatives in terms of providing additional transportation choices by locating the station within walking distance of the highest number of residents and employees in the Potomac Yard area. Alternative B also performs better than the other alternatives in terms of reducing the forecast number of automobile trips with an origin or destination point in Potomac Yard.[9]

d. Consistency with Plans and Development. The analysis states that Alternative A is not consistent with the NPYSAP. However, the location of Alternative A appears to support redevelopment of this area.

i. Why does existing zoning preclude Alternative A when it is proposed to be built on-line and immediately adjacent to Alternative B? Why/how does Alternative A eliminate the accommodation of 3.8 million square feet of future development? Can this be addressed by modifying the NPYSAP?

RESPONSE: As discussed in Responses 1.b and 2.c.ii, the zoning cannot be amended to increase the building height and density in close proximity to Alternative A due to the FAA flight path height limits and the fact that more of the high-value developable land is in North Potomac Yard (i.e., closer to the more northerly Alternative B location). Thus, within the relevant walking distance for Alternative B, there is more developable land available, and taller buildings can be constructed on that land.

ii. The DEIS materials 'Initial Screening of Alternatives Report – 2011' indicates that the CDD#10 Concept Plan assumed a Metrorail station at Alternative A. When did the NPYSAP change to support Alternative B and what was the cause for this change?

RESPONSE: The location at Alternative A was initially included in WMATA's long-term planning as a potential location for a future infill station as early as the 1960s. The Blue Line, which opened in 1977, included a section of straight track at that location and a reservation of space to allow for the eventual construction of an infill Potomac Yard Metro station. Those early planning efforts did not predict, and indeed could not have predicted, all future changes in the Potomac Yard area that were brought about by several decades of growth and development. Nor could those planning efforts decades have anticipated the City's development needs in 2019. The result of changes to the area since the 1960s and the City's current plans for future redevelopment dictate that selection of Alternative B over Alternative A. Consistent with the legacy WMATA planning decisions, the existing reserve area for the Potomac Yard Metro station (Alternative A) was initially identified in 2003 along the current track alignment, and it was identified at that time as the best potential location in concept. It is also the City's present understanding, based on a review of the

[9] Final EIS, Section 2.3.3.4- Results of Support for Project Purpose and Need Assessment

relevant documents from the time period, that the earlier planning efforts that stated a preference for the Alternative A station location overlooked the building height restrictions imposed by the FAA.

The initial reservation area was provided to not preclude a future the Potomac Yard Metrorail station (Alternative A) as part of the Potomac Greens in 2003 redevelopment in Potomac Yard. While a reservation, there was not a method identified to fund and construct the Metrorail station. A Potomac Yard Metrorail Station Feasibility Work Group was established in 2009 to review the initial reserve area as well as other locations in a Potomac Yard Metrorail Station Concept Development Study. The intent of this Work Group was to analyze the feasibility of the Metrorail station, but to also integrate land use and transportation to maximize ridership for the Metrorail station.

The Work Group was charged with (a) analyzing the financial tools, fiscal impact and risks of funding the Metrorail station; (b) examining concept refinement, costs, and constructability of a new Metrorail station; and (c) evaluating ridership estimates. The Work Group met on an ad hoc basis for approximately a year and reviewed the information ultimately presented in the Potomac Yard Metrorail Station Concept Development Study (Concept Development Study) report (February 3, 2010). This study examined eight potential locations for a new infill Metrorail station at Potomac Yard, and addressed the station sites' relationship to planned and approved development in Potomac Yard and Potomac Greens, necessary modifications to Metrorail track and systems to accommodate a station at each site, and the estimated Metrorail construction costs. The resulting information was intended to assist the current planning efforts to select a site for a potential new Metrorail station. While the group was not charged with making recommendations to any of the City's appointed or elected bodies, in their review and analysis of the materials they developed guidance that reflects the work done and the consensus points reached by the Work Group.

The guidance that was developed by the Work Group relates to station location, relationship between station construction and proposed development, and funding and financial risk to the City. Consensus was reached by the Work Group on the following:

1. For the purpose of future NEPA environmental studies, continue studying options within the envelope of the northern station locations and the existing station reservation site (A). The C and D options should be removed from further consideration. The northern station envelope encompasses the maximum footprint, including permanent maintenance easements, which would be required for the construction of a station along the Metrorail alignment north of the existing station reservation[10].
2. The existing transportation infrastructure cannot support the Landbay F proposed development. Construction of the Metrorail station is required to support the level of development proposed in Landbay F.
3. Amendments to the Master Plan and the rezoning of Landbay F cannot go forward until the City is satisfied that an acceptable financing plan has been developed and agreed to.
4. The financial risk to the City must be carefully structured and managed. Terms and conditions in contracts and land use approval actions need to be carefully and clearly detailed so all parties understand expectations and obligations, and therefore the financial risks to the City are mitigated.

[10] *Potomac Yard Metrorail Station Concept Development Study, Section II, page 62 - Completed February 3, 2010*

5. No negative cash impact on the City's General Fund in any given year. The projected "gap" between the anticipated tax revenues from the special tax district, per square foot developer contributions, plus additional incremental net new revenues generated by the project, will need to be "bridged" in the early years of the bond financing by firm and sufficient upfront Landbay F payments, so there will be no negative cash impact on the City's General Fund in any given year.
6. Any proposed financing must be conservative with a sound financing structure and shared risk. The proposed financing must not put at risk the City's AAA/Aaa bond ratings, as well as projections used for the Metrorail station construction costs, as well as the project build-out timetable and resultant projected tax revenues need to utilize conservative assumptions, so that the downside risks can be minimized. Some of the downside risks also need to be shared by the participating parties.

After the initial screening as described in the Concept Development Study, the Work Group recommended that three of the eight original station location alternatives should remain under consideration and could proceed to the environmental analysis phase of the feasibility process: No build, and Alternatives A and the B2 and B3~~,~~ (see Figure 28). The Study screening of alternatives eliminated Alternative B1 due to the impacts to the National Parks Service property, tunnel alternatives (Alternatives C1 and C2), and aerial stations within Landbay F adjacent Potomac Avenue (Alternatives D1 and D2) due to the complexity of construction, phasing challenges, and costs, without providing access to significantly more density. The 2010 North Potomac Yard Small Area Plan (p. 58) notes that the B alternatives, as depicted and discussed in the Concept Development Study, best achieve the intent and vision of the Plan. They are the most desirable from a land use perspective because they are directly accessible to the potential 7.5 million square feet of development in Landbay F and to the 1.8 million square feet of development planned in Landbay G, while still being located within a quarter mile of the 1 million square feet of development zoned for Landbay H.

*3. **Alternative B-CSX***

a. CSX Right-of-Way and Operations. The application states that Alternative B-CSX is not practicable due to major disruption of track services and the need to obtain agreements. Given that the project is to serve future development, how does a time delay preclude this as a practicable alternative?

RESPONSE: It must be first emphasized that there is a high degree of uncertainty as to whether Alternative B-CSX is an "available" alternative. There is no reasonable guarantee that a station could be constructed at Alternative B-CSX over any time period because the City lacks authority to condemn CSX's property. Moreover, even if a station can be built at that site, the time it will take to reach all necessary agreements with CSX and complete the work necessary to move the existing CSX tracks to a new location could delay the project indefinitely. In addition, this alternative would reduce the amount of development by 1,804,625 sf within 0.5 mile of the Metrorail station, compared to Alternative B. In short, for Alternative B-CSX to be implemented successfully, the City would have to rely on CSX to exercise its discretion to approve a project that would cause severe disruptions and expense to CSX and other users of its right-of-way, including Amtrak and the Virginia Railway Express. That cedes control of the timing, cost, and feasibility of the project to a third party that has already stated its opposition to this alternative.

The City's previous discussions with relevant parties regarding Alternative B-CSX strongly suggest that there will be substantial, and potentially insurmountable, obstacles to implementing this alternative. In comments on the DEIS, both the Virginia Department of Rail and Public Transportation (May 4, 2015 letter) and the Virginia Railway Express (VRE) (May 15, 2015 letter) objected to the B-CSX Design Option based on impacts to railroad operations. The relocation of the CSXT tracks was anticipated to result in substantial disruption to CSXT, Amtrak, and VRE rail operations along the line due to track shutdowns during construction. VRE expressed concern in its comments that the disruptions would degrade its on-time performance and customer satisfaction and reduce its ridership in an unacceptable manner. Because Alternative B-CSX calls for the station to be located on the current CSXT right-of-way, the City and WMATA would have to obtain the consent of CSXT, which holds a permanent easement for its existing right-of-way. Neither WMATA nor the City may use its power of eminent domain to acquire CSX property. And although CSX did not categorically rule out the possibility of an agreement, it stated in its April 30, 2015 letter that it strongly preferred that Alternative B-CSX **not be chosen** for the Project due to anticipated disruption of CSX operations. Moreover, in both the April 30, 2015 letter and an earlier May 28, 2014 letter, CSX set certain general conditions that must be met if any agreement were to be reached. Those conditions include reimbursement for all CSX costs for the relocation, including design, land acquisition, construction, and payment of passenger delay costs and penalties to Amtrak and VRE, additional pedestrian access structures, and additional undefined roadway and railroad access. The potential amount of those costs has not been determined and it is uncertain that the City could pay the necessary amount. Furthermore, negotiations could take considerable time with no certainty that an agreement could be reached (or reached at a cost-effective price).

There are several reasons suggesting that a reasonable agreement could not be reached with CSX to locate the station at Alternative B-CSX. In previous legal proceedings with the railroads, *Norfolk Southern Railway v. City of Alexandria*, 608 F.3d 150 (2010), the U.S. Court of Appeals for the Fourth Circuit found that local regulation of the railroads is preempted by federal law. Thus, the City must approach railroads prepared for long negotiation processes. The City's experience with the railroad has been that it is extraordinarily slow and categorically opposed to consideration of projects that may impact rail operations along this corridor. This corridor, known as the Washington to North Carolina Corridor, is a federally significant intermodal freight corridor and the primary north-south route for Amtrak long-distance service. It is the most heavily used corridor in Virginia, with increasing freight, regional and long-distance passenger rail, and commuter rail services. The corridor provides a critical link between Amtrak's Northeast Corridor and the federally designated Southeast Corridor. The corridor also provides another rail link between the Port of Virginia and the Midwest, which previous Commonwealth investments have helped to clear for double-stack container service. The corridor has the most severe bottlenecks on the freight rail network, specifically across the Potomac River, where a four track system merges to just two tracks (the Long Bridge) to cross from Virginia into Washington, D.C.[11] In addition, some of the future development that was anticipated in the EIS is already occurring, including the recently completed National Institute for the Blind (NIB) and the National American Physical Therapy Association (APTA) facility, both located near the intersection of E. Glebe Road and Potomac Avenue because of their proximity to the proposed station. Given this situation, it is not reasonable to assume that an agreement could be reached to locate the station at Alternative B-CSX.

This alternative will require approval by CSX to reconfigure the adjoining tracks, a significant and time intensive process that would likely take 5-7 years and would have a low likelihood of ultimate approval by CSX. If approved, however, the NPYSAP would have to be amended and would

[11] 2017 Virginia State Rail Plan, Executive Summary, p. 15

require a 12- to 18-month community process. The total delay would be 6 to 9 years. As discussed in response 2.a.i, commencement of construction of the Metrorail station is a necessary next step to provide enough surety for property owners in North Potomac Yard to proceed with their respective development. Similar to all large infrastructure projects, there will be a limited number of "pioneer" projects willing or able to risk proceeding prior to infrastructure completion. The remainder of the projects will wait until the infrastructure is constructed.

Assuming a standard absorption rate of 3 buildings (two residential buildings and one office building totaling approximately 800,000 square feet) per year, the annual loss in tax revenue per year is $934,284. A delay of 6-9 years would result in lost revenue of $5.6 million to $8.4 million and a delay of approximately $14 million in developer contributions to fund the Metro station.

In 2017 and 2018, in partnership with Arlington County, the City successfully pursued the Amazon HQ2 (in Arlington) and a $1 billion Virginia Tech Campus. Virginia Tech is attracted in part by proximity to the planned station and would be impacted by the delay. More importantly, the City could not be able to capitalize on the spin-off opportunities of this announcement, as developers would be unwilling to invest until the process for a different location is completely concluded.

b. Land Acquisition and Relocations. This alternative is stated as not practicable as it would require the acquisition of 14.36 acres of property (4.44 acres of City land and 9.92 acres of private land) and land from CSX. The application states that based on previous experience the cost and time associated with the purchase of CSX land would be prohibitive. Based upon review of the application, it appears that the cost of land acquisition was considered in the financial analysis which also indicates that Alternative B-CSX has a positive cash flow. How does this cost contribute to eliminating this as a practicable alternative?

RESPONSE: The 2014 financial analysis made certain assumptions necessary to complete the exercise – namely that it would be possible to reach a reasonable agreement to obtain the land from CSX. While that assumption was necessary to complete the financial analysis at that time, it does not mean this assumption was comprehensive or remains valid. The analysis was issued prior to the strong objection letter from VRE and did not account for, for example, the additional cost for land acquisition from CSX and private land would add uncertainty to the project schedule, thereby potentially delaying the construction and opening. The delay to the opening of the station would likely result in a delay and uncertainty for private development that would therefore have a negative fiscal impact to the City and ability to fund the station.

B-CSX is higher partly due to the escalation, but also due to a very large amount of ROW acquisition that isn't required in Alternative B. Of the $83 million cost difference between Alternatives B and B-CSX, about $25M of that difference from the additional ROW cost associated with B-CSX.

c. Constructability/Safety of Workers/Disruption of Rail Services. The application states that Alternative B-CSX is not practicable due to challenges with moving existing rail lines, construction of new rails, working within an active rail right-of-way (although the station would be built off-line), extensive system closures, and safety. This statement must be supported based on cost, available technology, and logistics.

i. Does technology, logistics, or cost preclude the construction of this alternative?

RESPONSE: Technology alone does not preclude Alternative B-CSX. Logistics for this alternative focus on the relocation of CSX track and the likelihood of CSX agreeing with alternative, land use, service disruption, and track relocation as detailed in Response 3a. This alternative is not practicable as a matter of logistics.

The cost of Alternative B-CSX was 31% higher than Alternative B, based on costs used in the NEPA documents. Any further assessment of ROM costs would escalate these costs higher given updated cost information and assumptions. Cost makes this alternative impracticable.

ii. Is the technology for this method of construction readily available? Is the technology and construction methods necessary to proceed with this alternative being used in other rail line, Metrorail lines, and Metro station projects that have occurred and/or are occurring across the region?

RESPONSE: The technology is available to construct this project. WMATA is unaware of other locations where this alternative has been used elsewhere nationally, however WMATA has used this approach (construction of a rail by-pass) locally, specifically during construction of the College Park Metrorail station.

d. Maximum Access to Station. If development is not in place nor under construction, can the zoning be modified to increase access to the station from this location?

RESPONSE: Alternative B CSX is not financially feasible due to construction costs, and while the zoning could be modified somewhat to add density in the vicinity of the station, it would not be possible to add back as much density as would be lost from the reduction of developable land that Alternative B CSX requires. It would also require an amendment to the small area plan with a community process, which would delay the station.

e. Consistency with Plans and Development. The analysis states that Alterative B-CSX is not consistent with the NPYSAP. It appears that current zoning accounts for Alternative B; however, the location of B-CSX appears to support redevelopment of this area. Can the NPYSAP be practicably modified to accommodate Alternative B-CSX?

RESPONSE: The Plan could be amended to support B-CSX, however, the location would result in a substantial plan and zoning amendment and would result in a substantial delay and loss of tax revenue. This option would also reduce the amount of total development within North Potomac Yard.

4. ***Alternative D***

a. Cost. Could the NPYSAP be practicably modified to make Alternative D financially practicable? If not, provide sufficient explanation. If yes, respond to questions 4.b and 4.c below.

RESPONSE*:* No, Alternative D (Figure 3) occupies a significant area of North Potomac Yard, which results in a loss of 2,028,250 sf of total development within Potomac Yard. Given the height limits of 150-250 feet for Potomac Yard, market conditions and building height considerations due to the adjoining smaller scale neighborhoods to the east, a significant amount of density cannot be added to North Potomac Yard. The loss of 2,028,250 million square feet equates to $8.5 M in loss

tax revenue.

Although we have pointed out that the FAA flight path significantly limits building heights in the vicinity of Alternative A, the City doesn't have unlimited ability to allow taller buildings in other locations. The height limits of 150 – 200 feet in North Potomac Yard were negotiated with the National Park Service, which has some jurisdiction over heights in North Potomac Yard due to the proximity to the George Washington Memorial Parkway.

b. Constructability/Safety of Workers. The application states Alternative D is not practicable due to challenges associated with multiple aerial structures, crossing of CSX tracks, aerial platforms, and a bridge over Four Mile Run. This statement must be supported based on cost, available technology, and logistics.

i. Does technology, logistics, or cost preclude the construction of this alternative?

RESPONSE: The technology to construct Alternative D is available. WMATA has built aerial stations, along with bridges over railroads, creeks and streams.

Based on the estimates presented in the NEPA document, Alternative D costs are 84% higher than Alternative B. There was no need to further refine the previous costs estimates for D because they were already substantially higher than either Alternative A or B. Any further assessment of ROM costs would escalate these costs higher given updated cost information and assumptions. Based on cost estimates, Alternative D is impracticable.

ii. Is the technology for this method of construction readily available? Is this technology and construction methods being used in other rail line, Metrorail line, and Metro station projects that have occurred and/or are occurring across the region?

RESPONSE: Alternative D consists of the following:

1) Building soil embankments to facilitate the transition of the tracks from at-grade to an elevated structure, so that the track can safely cross both the existing WMATA rail tracks and the existing CSX rail tracks;
2) Construction of piers to support the beams with the new aerial tracks as the alignment crosses the rail tracks twice;
3) Construction of an aerial station; and
4) Construction of a new bridge across Four Mile Run.

While it is technically possible, crossing railroads is challenging because it involves emplacement of structures over active railroads. This, in turn, requires permissions from CSX. This alternative would result in greater environmental impacts, especially noise and vibration impacts to the Potomac Greens community and more wetlands/waters of the US impacts, due to the new bridge crossing Four Mile Run impacting wetlands and tidal waters.

c. Land Acquisition and Relocations. Given that the project is to serve future development, how does a time delay preclude this as a practicable alternative? How does the cost and time required to secure this alternative differ from the time and cost invested for land acquisition and negotiations with the National Park Service for Alternative B?

RESPONSE: As discussed in Response 3.a, property owners and potential developers want

assurance that the Metrorail Station is underway or complete prior to proceeding with construction of buildings that are depending on a Metro-proximate location for much of their value. Give the cost of each building ($60-100 million) developers and property owners will want surety that the Metrorail Station is underway before proceeding with construction.

The National Parks Service (NPS) has authorized the use of NPS land within the George Washington Memorial Parkway (GWMP) and General Scenic Area Easement (GSAE) in the Record of Decision (ROD); The NPS has concurred that Alternative B best meets the overall project Purpose and Need compared to other alternatives, considering environmental consequences. During Environmental Impact Statement (EIS) process, the City and WMATA worked with NPS to minimize impacts to NPS administered resources and keep NPS ROW requirements to a minimum, as well as mitigation measures spelled out in a Net Benefits Agreement, where adverse impacts were unavoidable.

The Alternative B requires up to 0.33 permanent acres of GWMP property for the connecting track, and up to 0.42 acres of temporary GWMP property to accommodate construction access/staging. In comparison, Alternative D requires up to 1.43 permanent acres of GWMP property, and up to 2.40 temporary acres for construction, as described in the ROD (See Attachment F page D-38, and Attachment G).

In addition, the Alternative B requires up to 1.94 permanent acres of GSAE to accommodate the station building / connecting track, and up to 3.09 temporary acres of GSAE property to accommodate construction / staging. For Alternative D, no permanent GSAE land is required, and .02 temporary acres are needed for construction access, as described in the Record of Decision (See Attachment F, page D-38, and Attachment G, page G-9). The GSAE is the natural buffer between the development and the GW Parkway.

Under Alternative B the NPS will transfer to the City up to 0.33 acres of GWMP land, and release up to 1.94 acres of GSAE. The City is to convey to NPS in fee, the remaining 6.32 acres of GSAE. The land exchange involves a number of steps, coordinated between NPS, the DOI Office of Valuation Services, and City of Alexandria (See page 13 of the ROD).

Several potential measures are proposed to mitigate uses and temporary construction activities to the GSAE. Since the Alternative B requires the permanent use of the GSAE administrated by NPS, the use of the easement requires a new easement by NPS, which would require equal value exchange in property or interest in property as required by Federal law mitigation (54 U.S.C. 102901). The project would also replace any park amenities and landscaping that are removed or displaced due to any permanent use by following a new landscaping planting strategy that is consistent with the historic character and design principles of the GWMP, as documented in the Mount Vernon Memorial Highway Cultural Landscape Report, Vol. I, p. 72-74 (NPS, 1987). Adding new landscaping to the Greens Scenic Area easement would provide a visual buffer to the proposed station. Landscape mitigation measures would be reviewed and approved by NPS.

Temporary construction mitigation efforts for both Alternative B and Alternative D would require a construction permit as agreed to with NPS. Additional efforts include the restoration of disturbed areas to prior conditions through construction restoration, landscaping, and vegetation plans as agreed to with NPS.

The time and cost for acquiring both permanent and temporary land from NPS is likely to be greater under Alternative D as compared to the Alternative B, due to the greater amount of NPS land

involved.

For the Alternative B, portions of new station and track will be constructed within NPS regulated wetlands. For permanent wetland impacts, NPS will be compensated through off-site wetland restoration; for temporary wetland impacts, compensation will be through both off-site wetland restoration and on-site restoration. The same process would be used for any permanent or temporary wetland impacts with Alternative D.

Final design specifications and site plan are subject to review by NPS; NPS will provide WMATA a Special Use Permit prior to construction, detailing construction timeframes. This process would be similar for all alternatives, including Alternative D.

5. ***Minimization of Alternative B***

a. Section 3.1.1 states that B1, B2, and B3 met the technical feasibility criteria. Section 4.1.2 provides a narrative of B1, B2, and B3. Provide further explanation, to include supporting graphics, or direct staff to the specific page in reference documents to clarify why shifting the location north or south is not a practicable alternative that would reduce wetland impacts.

RESPONSE: The proposed location of the station at Alternative B minimizes wetland impacts to the greatest extent practicable. Shifting the station location to the north or south would increase impacts.

Station design and location, and the resulting impacts, are determined by track geometry considerations. Stations must have 750 feet of tangent (straight) track, to accommodate 8-car trains and clearance into and out of stations. To accommodate special trackwork (in this case, a required double crossover), about 200 feet of additional straight track is required for this project, in addition to the other requirements. The exact length of required tangent track for a double crossover is a function of the distance between the two tracks. An additional amount of clearance is required between the special trackwork and the station. In total, approximately 1300 feet of tangent track is required for this project. The grade of the station itself is limited to 0.35%. Special trackwork is required to be level.

A relocation of the station northward from its current location would result in additional impacts to wetlands/waters of the US, due to the concentration of wetlands north of the project site. Moving the station further north would not remove the requirement for an access road from Potomac Greens, retaining the impacts from the tracks and access road at the southern end. Moving the associated mezzanine further north would result in greater visual impacts to the George Washington Memorial Parkway. These impacts would result in a greater adverse effect under the National Historic Preservation Act and additional Section 4(f) impacts due to additional encroachment on NPS land and to visual impacts.

A southward relocation of the station will push the overall alignment eastward, due to the need to realign tracks to achieve the needed tangent tracks, causing additional impacts to wetlands. The construction site must have a safe clearance envelope to ensure that construction activities of the new station do not foul operations on the existing track alignment. The need for separation between the existing alignment and the new southern alignment then forces the new alignment further east, further into the wetlands.

Although the NEPA documents contain an early evaluation of B1, B2, and B3, it does not fully

answer your question. A new evaluation of a station shift both north and south was conducted to reflect current project information. The attached graphic (Figure 11) illustrates how the changes in track geometry influence the station location and wetland impacts. The table compares the current impacts with the northern and southern locations. Assumptions were not made as to the composition of wetland types (i.e. PFO or PEM) but presented as total wetland impacts based on the original delineation mapping.

Location	Total Permanent Wetland Impacts
PYMS - as presented in permit	1.56 acres
Northern shift	2.26 acres
Southern shift	2.59 acres

b. Section 4.1.1 indicates that the station design has been minimized to the maximum extent feasible, however, the application does not provide sufficient documentation to support that statement.

i. Is the size of the footprint of this proposed station consistent with other Metrorail stations? Does this station include design characteristics that cause the footprint to be larger than other Metrorail stations?

RESPONSE*:* Yes, this station footprint is consistent with recently-constructed stations built to modern standards. Some older stations do have smaller footprints because they were built to different safety and fire standards. Fire protection standards (NFPA 130[12]) require larger, wider platform areas and larger egress corridors to allow riders to quickly exit the station, when compared to earlier stations. This requirement causes a larger footprint for the station itself. Additionally, WMATA design standards, such as the need for redundant elevators for handicap access, have increased the overall footprint, when compared to older stations. The emergency access road was increased in width for the originally proposed road at the request of the Fire Marshal to meet current safety codes for emergency access vehicles. The station does not include any design characteristics influencing the station width or length outside of WMATA, ADA, and NFPA codes.

ii. Are there design features that can be eliminated to reduce wetland impacts?

RESPONSE: No, the station is designed to meet WMATA, NFPA 130, and ADA current standards. No elements that influence the width or length of the station or access road can be further minimized to reduce the project footprint.

6. ***Temporary Impacts***

a. Section 4.2 indicates that the temporary impacts were reduced to allow for only a 50-foot minimum work area for the crane operations. Where will equipment and construction materials be staged? Provide detailed justification for the proposed acreage of temporary impacts.

RESPONSE: As stated in the application, the temporary impacts are needed for equipment, primarily cranes, to move along a level surface along the length of the project. Placing the cranes

[12] NFPA130- Standard for Fixed Guideway Transit and Passenger Rail Systems 2017

on the western side of the proposed station would interfere with the existing tracks and negate the benefits of an off-line construction project. In addition, a haul road along the eastern section of the temporary impact will be used to move fill in and out of the site. The permanent access road and the temporary haul road will create a loop to facilitate one-way traffic in and out of the site for the movement of fill material.

Temporary, clean fill will be placed in the wetlands atop a filter fabric or similar barrier during construction and removed when the site work is complete. A preconstruction survey will be completed in the wetland area to ensure existing wetland contours are restored. Appropriate erosion and sedimentation control measures will be used to retain all fill material and sediment on site.

b. Were any alternative staging locations considered? If so, provide details concerning these alternatives and why there deemed not feasible.

RESPONSE: Multiple staging locations were considered and several are incorporated into the project construction plan. The attached map (Figure 12) shows the staging areas, outside of wetlands, being used for placement of construction material and stockpiles. Locations closest to the wetland area are shown on the Jurisdictional Impacts Map and insert (Figures 13-14), numbered 1-6 and described in the map legend.

7. ***Impacts Map***

a. Provide the following graphics for the surface water impacts:

i. Provide the locations of all proposed structures associated with the construction of the Metrorail station. The impacts map provided does not depict what activities are occurring on the west or southwest portion of the project area or the access points to the west side of the station.

RESPONSE: Please see revised Jurisdictional Impacts Map (Figures 13-14). The western limits of disturbance (LOD) have been added, along with the location of the pedestrian bridge over the CSX railroad tracks. Final engineering of the western structures is not complete and may change slightly within the LOD.

ii. Does the project area include all of the 3,750 feet of proposed new or re-aligned track work?

RESPONSE: The revised impacts map (Figures 13-14) indicates the location of 1177 LF of track work north of the LOD. This track work is included in the 3,750 feet but does not require fill or grading. Minor track adjustments will be made within the existing right-of-way to tie in correctly to the new track and meet new geometrics.

iii. Remove the Revised LOD from the impacts map. Staff believes this information was intended to demonstrate the reduction in temporary impacts; however, the proposed final impacts map should only depict the proposed construction.

RESPONSE: Yes, the original LOD was included to show the Avoidance and Minimization of the temporary impacts. It has been removed at your request.

iv. Add the location of all stormwater outfalls.

RESPONSE: Please see the revised Jurisdictional Impacts Map (Figures 13-14). Stormwater outfall locations are shown extending from the underground vault and sand filter. Multiple, small outfalls will be used to disperse water into the restored wetland area to maintain hydrology. The size of the pipes and structures such as level spreaders will be identified in the Final Restoration Plan.

v. Per 9VAC25-210.80.B.1.i.4, update the impacts map to include mean low water and mean high water lines in tidal areas.

RESPONSE: The mean low water (MLW) and mean high water (MHW) are downstream of the project limits and were located during the tidal limits study. MHW is shown on the first page of the Jurisdictional Impact Map (Figures 13-14) and Tidal Limits Map (Figures 15-16) outside of the project limits; however, MLW (elevation is -1.21) is significantly downstream and not visible on the impacts or tidal survey maps. An arrow indicates the general location of the MLW elevation. The tidal limits, as defined by the Code of Virginia, is shown near the project limits.

vi. Provide cross-sectional drawing(s) of each proposed impact area to include, at a minimum, a graphic scale, existing and proposed elevations, limits of surface water areas, impact limits, and location of all existing and proposed structures.

RESPONSE: Please see the attached cross sections and overall map (Figures 17-18) indicating cross section locations. Cross sections are provided every 100 feet, with one additional cross section at 450+50 at the location where the tidal wetlands are closest to the limits of disturbance.

8. ***Restoration Plan***

a. The temporary impact area currently includes a walking trail providing recreational value. The current restoration plan does not propose such trails or the restoration of this use. Staff requests that the plan be modified to include recreational trails of permeable materials so that this recreational use is restored post-construction.

RESPONSE: The City intends to maintain the existing recreational use of this area the extent feasible. The City is presently exploring opportunities to maintain this use without causing additional impacts. One of the options under consideration entails reconnecting portions of the trail that will remain with a boardwalk or other structure that would require minimal, if any, additional wetland impacts. The City will continue to work the DEQ to resolve this issue. The final restoration plan will include further details regarding the trail, invasive species control, and grading.

9. ***Other Items***

a. The application references several documents that are available on various internet sites. Please note, any materials intended to be part of the record must be submitted to DEQ-NRO. Per DEQ's request, Stantec Consulting Services Inc. provided DEQ with the attached reference list

to download certain documents. These documents will be considered part of the response to this additional information request.
RESPONSE: These documents were provided via thumb-drive on February 21, 2019.

b. Once impacts are finalized, provide a to-scale hardcopy of the impacts map at a scale of no greater than 1 inch to 200 feet, utilizing cut-sheets as necessary.

RESPONSE: Hardcopy of the map is being proved under separate cover via regular mail.

10. ***Application Fee***

a. A permit application fee of $5,920.00 is required to complete the application. DEQ will continue processing the permit application; however, a draft permit cannot be issued until the required permit application fee is deposited by the DEQ Receipts Control department. Checks or money orders should be made payable to the Treasurer of Virginia. Do not send cash. Please complete the enclosed Permit Application Fee Form and mail with the designated fee to the following address: DEQ, Receipts Control, P.O. Box 1104, Richmond, Virginia 23218.

RESPONSE: The fee was submitted. A copy of the check is attached.

Attachments:
Figure 1: Growth Crescent Map
Figure 2: Alexandria Planning Process
Figure 3: Land Uses
Figure 4: FAA Restrictions
Figure 5: Building Heights
Figure 6: Development Status
Figure 7: Alternative B
Figure 8: Alternative A
Figure 9: Alternative B-CSX
Figure 10: Alternative D
Figure 11: Alternative B – North and South Shift
Figure 12: PYC Staging Areas
Figures 13-14: Jurisdictional Impacts Map
Figures 15-16: Tidal Graphic
Figures 17-18: Cross Sections

Region Forward: A comprehensive Guide for Regional Planning and Measuring Progress in the 21st Century
CDD#19
City of Alexandria Comprehensive Transportation Master Plan 2008
Alternatives Cost Review March 10, 2019
Potomac Yard Metrorail Study Concept Development Study 2010
DEIS: Initial Screening of Alternatives: Appendix A: Analysis of Technical Feasibility of Alternatives
Virginia Statewide Rail Plan: Executive Summary
Permit Fee